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Taiwan Utility Model Patent Application No. 78202380

Title: Portable Air Purifying Apparatus

Application Date: March 17, 1989

Publication Number: 165710

Portable Air Purifying Apparatus

Descriptions of the Creation:

The present creation relates to a portable air purifying apparatus, more particularly, to an air purifying apparatus which can be carried by a user to eliminate particles, dust and pollen floating in the air, so as to provide clean air.

Nowadays, in the industrial and business society, the population is concentrated in cities. In addition, people have been getting wealthier and using automobiles more as transportation, so that traffic is busy and crowded. Accordingly, there is significantly an increasing amount of dust floating in the air, no matter whether inside or outside the house. Such a condition tends to cause diseases of respiratory system. People should be worried about this fact. Such a situation becomes more serious especially in May, which is so called "pollen season".

The main object of the present creation is to solve the above problem. The present creation provides a portable air purifying apparatus. No matter where the user is, the particles and dust in the air in the vicinity of the user's nose and mouth can be largely eliminated. Accordingly, the user can breathe clean air.

Other objectives, the structure and functions of the present creation will be described in detail by referring to the drawings of the preferred embodiment. The detailed description follows:

As shown in Figs. 1, 2, 3 and 4, the present creation comprises: a housing (1), a printed circuit board (2), a negative ion emitting pin (3), a positive ion dust collection plate (4), a button switch (5), indicators (6) and a battery (7). The housing (1) is made of insulation material, and is suitably formed in a flat shape. The housing (1) has ears (8) provided on the upper portion for a wire or chain to pass through, so that the apparatus can be hung or held on the user's neck or other appropriate position. Accordingly, the apparatus can be located near the user's chest to purify the air in the vicinity of the user's nose and mouth. An aperture (9) is provided in the center of the top of the housing (1). The positive ion dust collection plate (4) is located in the aperture (9). The button switch (5) and a charging socket (10) for the battery (7) are provided on the left side of the housing (9). In addition, two indicators (6A, 6B) are provided on the surface of the housing. One indicator (6A) is a state indicator for indicating the using state. When the

button switch (5) is pressed, the metal piece of a spring (14)¹ approaches the negative ion emitting pin (3). If the energy is sufficient, the charging indicator (6A)² will be turned on, and the negative ion will emit energy; if the battery is low, the amount of negative ions is not sufficient, so that the indicator will not light. The other indicator (6B) is the charging indicator, which indicates the charging state. A printed circuit board (2) is provided in the apparatus. The printed circuit board (2) has a charging circuit (15), a switching circuit (16) and a negative ion emitting circuit provided thereon. The negative ion emitting circuit emits negative ions by the negative ion emitting pin (3), which aligns with the aperture (9). The switching circuit (16) provides three selections: ON, OFF and AUTO. If AUTO is selected, the apparatus will be automatically turned off if the user lies down, so that safety is ensured.

The negative ion emitting circuit of the printed circuit board (2) in accordance with the present creation comprises a pulse boosting circuit (11) for boosting. After boosting, a high voltage multiplying rectifier circuit (12) provides multiplying and rectifying. A negative ion output circuit (13) is caused to generate negative ions, which are in turn emitted out continuously from the emitting pin (3).³

Brief Description of Drawings:

Fig. 1 shows the profile of the present creation.

Fig. 2 is a cross-sectional view of Fig. 1.

Fig. 3 shows a negative ion emitting circuit.

Fig. 4 shows a negative ion detecting indication circuit.⁴

Brief Description of Reference Numbers:

| | |
|---|------------------------------------|
| 1 | housing |
| 2 | printed circuit board |
| 3 | negative ion emitting g pin |
| 4 | positive ion dust collecting plate |
| 5 | button switch |
| 6 | indicator |
| 7 | battery |
| 8 | ear |

¹ This reference number is not shown in the drawings.

² The reference number for this charge indicator should be 6B.

³ The descriptions in this paragraph are of a problem. However, you can refer to Fig.3 to know the operations of these circuits. Anyway, the circuits mentioned in the paragraph are not so important, since they are not defined in the claims.

⁴In fact there is no Fig. 4 in the drawings

| | |
|----|-------------------------------|
| 9 | aperture |
| 10 | charging socket |
| 11 | pulse boosting circuit |
| 12 | multiplying rectifier circuit |
| 13 | negative ion output circuit |
| 14 | spring |
| 15 | charging circuit |
| 16 | switching circuit |

Abstract

A portable air purifying apparatus comprises a flat insulting housing, an electronic printed circuit board, a negative ion emitting pin, a positive ion dust collecting plate, a button switch, indicators and a battery. The apparatus can be hung or held with clips to the user's chest, causing the particles and dust in the air in the vicinity of the user's head to carry positive ions, so as to be attracted by the positive ion plate. According, the dust and pollen floating in the air in the vicinity of the user's head can be reduced.

I Claim:

1. A portable air purifying apparatus comprising a housing, a printed circuit board, a negative ion emitting pin, a positive ion dust collecting plate, a button switch, indicators and a battery, said apparatus being characterized in that

the housing is flat and has ears on the upper portion for a wire or chain to pass through so that the apparatus can be hung or held near a user's chest, said housing also has an aperture provided on the center of the top, in which the positive ion dust collector is provided, and the negative ion emitting pin, which is under the plate, aligns with said aperture.

165710

公告本

| | |
|------|----------|
| 申請日期 | 78.3.17 |
| 案 號 | 78202380 |
| 類 別 | H02N |

(以上各欄由本局填註)

發明
新 型 專 利 說 明 書

| | | |
|------------------|--|--|
| 一、發明 名稱 創作 | 隨身用之空氣淨化裝置 | |
| 二、發明 創作 人 | 姓 名 籍 貫 (國 籍) 住 居 所 | 孫 實 慶 中 華 民 國 台北市松山區虎林街 132 巷 32 號三樓 |
| 三、申請 人 | 姓 名 (名 稱) 籍 貫 (國 籍) 住 居 所 (事務所) 代 表 人 姓 名 | 孫 實 慶 中 華 民 國 台北市松山區虎林街 132 巷 32 號三樓 78.5.5 |

發明之名稱：隨身用之空氣淨化裝置
 新型 *purify*

四、發明摘要：（應以簡明之文字敘述其申請專利內容之特點）
 創作

一種隨身用之空氣淨化裝置，包括：扁形絕緣殼體、電
 子印刷電路板、*negative ion emitting pin* 負離子發射針、*positive ion dust collector* 正離子塵埃收集板、*button* 按鍵
switch 開關、*indicator lamp* 指示燈、及 *battery* 電池等所結合而成。可吊掛或夾於使用
 者胸前隨身使用，藉負離子發射針所發之負離子，使使用
 者頭部附近空氣中微粒塵埃帶負離子，為正離子板所吸附
 ，減低使用者頭部附近空氣中漂浮之塵埃、花粉者。
flat insulating housing
PCB
particle
pollen

附註：本業已向

國（地區）申請專利，申請日期：

案號：

五、發明說明（本欄應載明有關之先前技術，發明或創作之目的，技術內容、特點及功效，
 創作 使熟習該項技術者能了解其內容並可據以實施）

本創作係有關一種隨身用之空氣淨化器裝置，特別指使
 用者隨身攜帶，能將使用者口鼻附近空氣中飄浮之微粒塵
 埃、花粉予以消除，俾獲得較潔淨空氣以供呼吸者。

查目前工商業社會，人口大部份皆集中在各大小都市中
 ，加以人民生活富足，均已採用自用小汽車代步，以致交

通狀況擁擠頻繁，相對地，空氣中飄浮之塵埃亦大量增加，不論是室內或室外，均已達到人類呼吸系統易造成疾病之程度，實令人憂心萬千，尤以五月花粉季過敏尤烈。

本創作之主要目的即在解決前述之困難，而提供一種隨身用之空氣淨化裝置，使用者不論身在何處，其口鼻附近之空氣中之微粒塵埃，可予以大量消除，使用者可呼吸到較潔淨空氣者。

本創作之其他目的、結構及功能，將參照較佳實施例之圖式，詳細地說明如下：

如圖一、二、三、四所示，本創作係包括：殼體①、印刷電路板②、負離子發射針③、正離子塵埃收集板④、按鍵開關⑤、指示燈⑥、及電池⑦等所結合而成。其中，殼體①係由絕緣材料製成，為扁形之適當形狀，上部具有掛耳⑧，供穿合適當之線或鍊（圖上未示），吊掛於使用者脖子或其他適當位置，俾本創作可位於使用者胸前，淨化使用者口鼻附近之空氣。前述殼體①之頂緣中央，設有一孔⑨，內結合正離子塵埃收集板④，左側具有按鍵開關⑤與電池⑦之充電插孔⑩，供使用時按開與充電時插入充電插頭。左方表面並設有兩指示燈（6A）（6B），指示燈（6A）為使用狀態指示燈，亦即指示在使用狀態；按鍵式開關⑤按下時彈簧⑪之金屬片會靠近負離子發射針③若能疊足時則會使充電燈（6A）亮，即負離子發射飽量，如電池不足負離子即不足指示燈即不亮，另一指示燈（6B）為充電指示燈，係顯示在充電狀態。其內結合一印刷電路板②，其

上設有充電電路⑮開關電路⑯負離子發射電路，由對正孔⑨之負離子發射針⑧發出負離子；並由開關電路⑯作三段選擇開、關及自動位置而自動位置乃作為躺下時自動關掉以供安全用。

本創作前述之印刷電路板②上之負離子發射電路係包括一脈波升壓電路⑪予以升壓，經升壓後，再經高壓倍壓整流電路⑫加以倍壓整流，使由負離子輸出電路⑬產生負離子，從發射針⑧連續射出。

裝

訂

線

申請案號數：七八二〇二三八〇

創作之名稱：隨身用之空氣淨化裝置

申請專利範圍：

1. 一種隨身用之空氣淨化裝置，係包括：殼體、印刷電路板、負離子發射針、正離子塵埃收集板、按鍵開關、指示燈、及電池等所結合而成，其特徵在於殼體為扇形，上部具有掛耳，藉適當之縫或鏈穿合可吊掛或夾於使用者胸前；頂緣中央設有一孔，內結合正離子塵埃收集板，板後具有對正該孔之負離子發射針者。

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圖式(可繪於本頁上或另以甲4號紙繪製)

圖一爲本創作外觀圖。

圖二爲圖一之剖面圖。

圖三爲本創作負離子發射電路圖。

圖四爲本創作負離子偵側指示電路圖。

- ①殼體 ②印刷電路板 ③負離子發射針 ④正離子塵埃
收集板 ⑤按鍵開關 ⑥指示燈 ⑦電池 ⑧掛耳 ⑨孔
⑩充電插孔 ⑪脈波升壓電路 ⑫倍壓整流電路
⑬負離子輸出電路 ⑭彈簧 ⑮充電電路 ⑯開關電路

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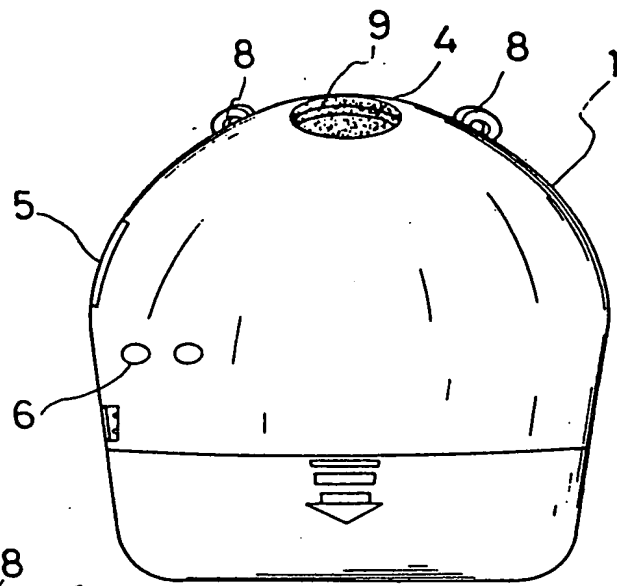


FIG. 1

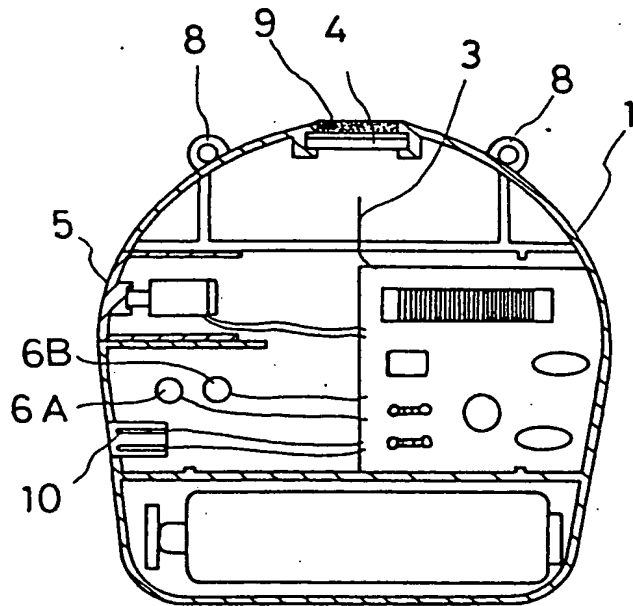


FIG. 2

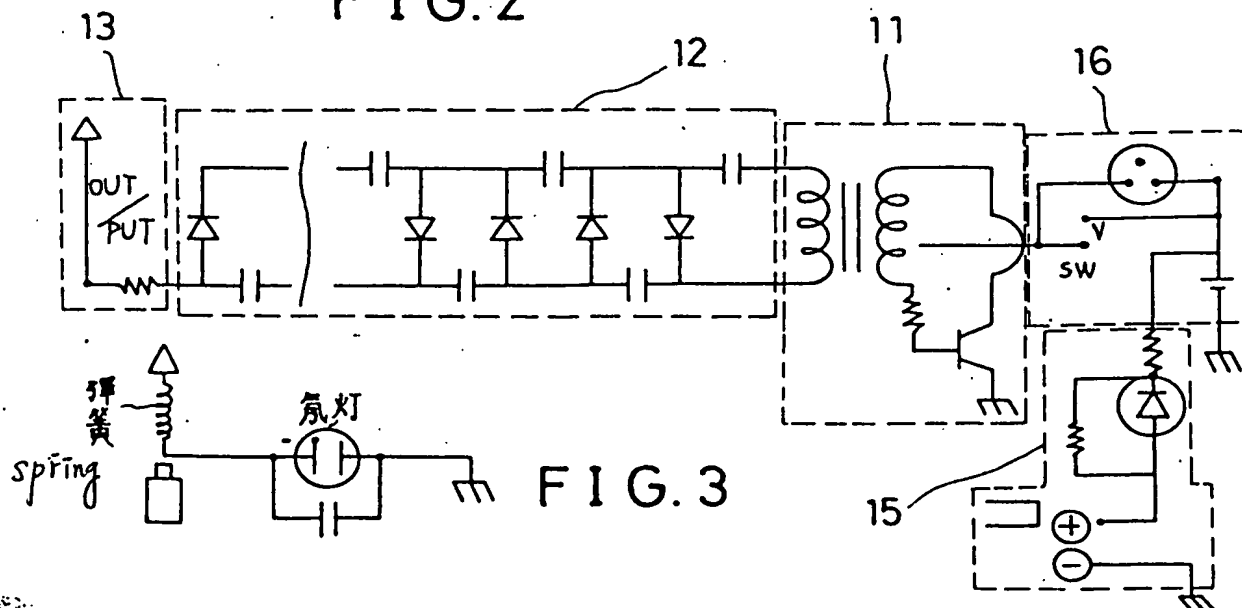


FIG. 3

(11)公告編號: 165710

(44)中華民國80年(1991)08月01日

新 型

全 2 頁

(51)Int. Cl.³: H02N1/00

(54)名 稱: 隨身用之空氣淨化裝置

(21)申 請 案 號: 78202380

(22)申請日期: 中華民國78年(1989)03月17日

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(74)代 理 人: 宋光榮 先生

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(57)申請專利範圍:

1. 一種隨身用之空氣淨化裝置, 係包括: 殼體、印刷電路板、負離子發射針、正離子塵埃收集板、按鍵開關、指示燈、及電池等所結合而成, 其特徵在於殼體為扁形, 上部具有掛耳, 藉適當之線或鏈穿合可吊掛或夾於使用者胸前; 頂緣中央設有一孔, 內結合正離子塵埃收集板, 板後具有對

正該孔之負離子發射針者。

圖示簡單說明:

圖一為本創作外觀圖。

圖二為圖一之剖面圖。

圖三為本創作負離子發射電路圖。

圖四為本創作負離子偵測指示電路圖。

5.